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Residential Code Notes

1. All construction shall be in conformance with the International Residential Code (IRC), 2003 edition, as amended by Montgomery County Executive Regulation No. 24-04. All chapters, tables, sections, figures and appendices referenced here within are from IRC. This document contains items often written on approved plans and is provided for convenience only. It is not intended as a substitute for the code or all of its provisions.

2. Table R301.2 (1). The residential construction design parameters are shown in the following table:

RESIDENTIAL CONSTRUCTION DESIGN PARAMETERS											
GROUND SNOW LOAD	WIND SPEED	SEISMIC DESIGN CATEGORY	SUBJECT TO DAMAGE FROM				WINTER DESIGN TEMP.	ICE SHIELD UNDER-LAYMENT REQUIRED	FLOOD HAZARDS	AIR FREEZING INDEX	MEAN ANNUAL TEMP.
			Weathering	Frost Line Depth	Termite	Decay					
30 psf	90 mph	B	Severe	24 in	Moderate to Heavy	Slight to Moderate	13°F	Yes	July 2, 1979	300	55°F

3. Table R301.5. Minimum design live load values shall conform to following values

TABLE R301.5
MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS
(in pounds per square foot)

USE	LIVE LOAD
Attics with storage[b]	20
Attics without storage[b]	10
Decks[e]	40
Exterior balconies	60
Fire escapes	40
Guardrails and handrails[d]	200
Guardrails in-fill components[f]	50
Passenger vehicle garages[a]	50[a]
Rooms other than sleeping rooms	40
Sleeping rooms	30
Stairs	40[c]

For SI: 1 pound per square foot = 0.0479 kN/m^2, 1 square inch = 645 mm^2, 1 pound = 4.45 N.

a. Elevated garage floors shall be capable of supporting a 2,000-pound load applied over a 20-square-inch area.

b. No storage with roof slope not over 3 units in 12 units.

c. Individual stair treads shall be designed for the uniformly distributed live load or a 300-pound concentrated load acting over an area of 4 square inches, whichever produces the greater stresses.

d. A single concentrated load applied in any direction at any point along the top.

e. See Section R502.2.1 for decks attached to exterior walls.

f. Guard in-fill components (all those except the handrail), balusters and panel fillers shall be designed to withstand a horizontally applied normal load of 50 pounds on an area equal to 1 square foot. This load need not be assumed to act concurrently with any other live load requirement.

4. Section R303.3. Ventilation air in bathrooms without windows shall exhausted directly to the outside of the building,

5. Section R305.1 as amended. Habitable rooms, hallways, corridors, bathrooms, toilet rooms, laundry rooms and basements shall have a ceiling height of not less than 7 feet. The required height shall be measured from the finished floor to the lowest projection of the ceiling.
   Exceptions
   1. Beams and girders spaced not less than 4 feet on center may project not more than 6 inches below the required ceiling height.
   2. Not more than 50% of the floor area of a room or space is permitted to have a sloped ceiling less than 7 feet in height. Any floor area having less than 5 feet of ceiling height shall not be considered part of the room area and shall not be allowed to have any permanent fixtures or furnishings such as, but not limited to, bathtubs, showers, water closets, sinks, cabinets, counters and shelves
   3. Bathrooms shall have a minimum ceiling height of 6 feet 8 inches over the fixture and at the front clearance area for fixtures as shown in Figure R307.2. A shower or tub equipped with a showerhead shall have a minimum ceiling height of 6 feet 8 inches above a minimum area 30 inches by 30 inches at the showerhead.

6. Section R308. Panes of glazing in hazardous locations shall be adequately identified.

7. Section R309. Garages shall be provided with a minimum ½-inch gypsum board applied to garage side. Where the separation is a floor ceiling assembly, the structure supporting the separation shall also be protected by ½-inch gypsum board. Garages beneath habitable rooms shall be separated from all habitable rooms above by not less than 5/8-inch Type X gypsum board or equivalent. A solid core wood door 1⅜-inch thick or a 20-minute fire-rated door is required.

8. Section R309.1.1. Ducts in the garage and ducts penetrating the walls and ceilings separating the dwelling from the garage shall be constructed of a minimum No. 26 gage sheet steel or other approved material and shall have no openings into the garage.

9. Section R310. Basements and every sleeping room shall have at least one openable emergency escape and rescue opening. Where basements contain one or more sleeping rooms, emergency egress and rescue openings shall be required in each sleeping room. Escape and rescue windows shall have a maximum sill height of 44-inch above the finished floor. All openings shall have a minimum net clear opening of 5.7 square feet (minimum 5 square feet for grade for openings), a minimum width of 20 inches and a minimum height of 24 inches. The net clear opening dimensions required by this section shall be obtained by the normal operation of the emergency escape and rescue opening from the inside. Emergency escape and rescue openings with a finished sill height below the adjacent ground elevation shall be provided with a window well in accordance with Section R310.2.

10. Section 311.2.2. Enclosed accessible storage under stairs and any soffits shall have a minimum $^{1}/_{2}$-inch gypsum board on the storage side.

11. Section 311.4.3. There shall be a floor or landing at each side of each exterior door. The floor or landing at the exit door required by Section R311.4.1 shall not be more than 1.5 inches lower than the top of the threshold. The floor or landing at exterior doors other than the exit door required by Section R311.4.1 shall not be required to comply with this requirement but shall have a rise no greater 7¾ inches.

12. Section 311.4.4. All egress doors shall be readily openable from the side which egress is to be made without the use of a key.

13. Section R311.5. Stairways shall have minimum 6 feet and 8 inches clear headroom. The minimum tread shall be 9 inches and the maximum riser shall be 8¼ inches. Open risers are permitted, provided that the opening between treads does not permit the passage of a 4-inch diameter sphere.

14. Section R311.5.6. Handrails shall have a minimum height of 34 inches and maximum 38 inches height measured vertically from the nosing of the treads and shall be graspable. Handrails shall be continuous the full length of the stairs with 4 or more risers from a point directly above the top riser of a flight to a point directly above the lowest riser of the flight.

15. Section 311.5.7. All stairways shall be illuminated.

16. Section R312. Open sides of porches, balconies, or raised floor surfaces located more than 30 inches above the floor or grade below and retaining walls with a difference in grade level on either side of the wall exceeding 30 inches and within 2 feet of a walkway, path, parking, lot, or driveway on the high side shall have guards not less than 36 inches in height. Guards on the open side of stairs with a total rise of more than 30 inches above floor or grade below shall be not less than 34 inches high. Spacing between intermediate rails shall be less than 4 inches. Openings for required guards on the sides of stair treads shall not allow a sphere 4⅜ inches to pass through.

17. Section R313. Install interconnected smoke alarms in each sleeping room, outside each sleeping area, and on each level. Alarms shall be hardwired (to the building wiring) with battery back up, NFPA 72 Section 2-2.1.1.1. Low voltage heat or smoke detection systems require a permit from the Department of Fire and Rescue Services. When alterations, reconstruction, change of use or occupancy, and additions on buildings that have the final approved inspection older than one year from the date of permit application occur smoke alarms must be installed in accordance with the Montgomery County Code Interpretation Policy P02-1.

18. Section R317. A common 2-hour fire-resistance-rated wall is permitted between townhouses, provided that there is no plumbing, electrical, or mechanical systems constructed within or through the common wall cavity.

19. Section R319. All untreated lumber shall be minimum 8 inches above exposed ground. Fasteners for pressure preservative and fire-retardant-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper.

20. Section R401.3. Surface drainage shall be diverted to a storm sewer conveyance or other approved point of collection so as to not create a hazard. The grade away from foundation walls shall fall a minimum of 6 inches within the first 10 feet.

21. Table R401.4.1. Soil bearing capacity shall be minimum 2000 psf. Unless the footing is insulated or bearing on rock, the bottom of the footing shall be a minimum 24 inches below grade.

22. Section R402.2.2. Concrete shall have a minimum specified compressive strength as shown in TableR402.2.

23. Section R403. All exterior walls shall be supported on continuous solid or fully grouted masonry or concrete footings, wood foundations, or other approved structural systems which shall be of sufficient design to accommodate all loads according to Section R301 and to transmit the resulting loads to the soil within the limitations as determined from the character of the soil. Footings shall be supported on undisturbed natural soils or engineered fill.

24. Section R403.1.6. Sill plates on the top of foundation walls shall be secured with minimum ½-inch anchor bolts set at 6 feet on center maximum and within 12 inches from the ends of each plate section but not closer than 3½ inches to end of plate. The bolts shall extend minimum 7 inches into concrete or masonry. Approved foundation anchor straps that provide equivalent anchorage to ½-inch anchor bolts are acceptable – provide ICC-ES report for spacing and nailing.

25. Section R404.1. Concrete and masonry foundation walls shall be selected and constructed in accordance with the provisions of this section or in accordance with ACI 318, NCMA TR68-A or ACI 530/ASCE 5/TMS 402 or other approved structural standards.

26. Section R404.1.6. Concrete and masonry foundation walls shall extend above the finished grade adjacent to the foundation at all points a minimum of 4 inches where masonry veneer is used and a minimum of 6 inches elsewhere.

27. Section R404.1.7. Basement walls shall not be backfilled until the wall has sufficient strength and first floor framing is in place, or the walls have been adequately braced.

28. Section R404.1.2. Concrete foundation walls shall be constructed as set forth in TablesR404.1.1(1), R404.1.1(2), R404.1.1(3) and R404.1.1(4), and shall also comply with the provisions of this section and the applicable provisions of Section R402.2.Tables R404.1(1), Tables R404.1(2), Tables R404.1.(3), and Tables R404.1.(4).

29. Section R404.2. Wood foundation walls shall be constructed in accordance with the provisions of this section.

30. Section R405. Foundation drainage shall be installed in accordance with this section.

31. Section R406.2. Exterior concrete and masonry foundation walls retaining earth and enclosing usable spaces below grade must be waterproofed with approved waterproofing materials or a membrane extending from the top of the footing to the finished grade.

32. Section R408.1. The under-floor space between the bottom of the floor joists and the earth under any building (except space occupied by a basement or cellar) shall be provided with ventilation openings through foundation walls or exterior walls.

33. Section R408.3. Access shall be provided to all under-floor spaces. Access openings through the floor shall be a minimum of 18 inches by 24 inches. Openings through a perimeter wall shall be 16 inches by 24 inches. When any portion of the through wall access is below grade, an areaway of not less than 16 inches by 24 inches shall be provided. The bottom of the areaway shall be below the threshold of the access opening.

34. When floor framing is less than 36 inches from the ground, a framing inspection must be requested prior to installing any flooring materials.

35. Section 502. Allowable spans for wood floor framing shall not exceed the values specified in Tables R502.3.1(1), R502.3.1(2), R502.5(1), and R502.5(2).

36. Section R502.8. For sawn lumber, notches in the top or bottom of the joist shall not exceed 1/6 the depth of the joist, shall not be longer than 1/3 of the depth of the member and shall not be located in the middle third of the span. Notches at the ends of a member shall not exceed 1/4 the joist depth. Holes drilled or bored in joist shall not be within 2 inches of the top or bottom of the joist, and diameter shall not exceed 1/3 of the depth of the member.

37. Section R502.10. Openings in floor framing shall be framed with a header and trimmer joists

38. Section R502.11. Wood floor trusses shall de designed in accordance with approved engineering practice. The truss drawings shall be prepared by a registered design professional and shall include all required details.

39. Draft stopping and fire blocking shall be provided in accordance with IRC Sections R502.12 and 502.13 respectively.

40. Section R503.1. Maximum allowable spans for lumber used as floor sheathing shall conform to TablesR503.1, R503.2.1.1 (1) and R503.2.1.1 (2).

41. Concrete floors on ground shall comply with IRC Section R506 as amended.

42. Section R602.3. Exterior walls of wood-frame construction shall be designed and constructed in accordance with the provisions of this chapter.

43. Section R602.3.1. The size, height and spacing of studs shall be in accordance with Table R602.3. (5).

TABLE R602.3(5)
SIZE, HEIGHT AND SPACING OF WOOD STUDS[a]

	BEARING WALLS					NONBEARING WALLS	
STUD SIZE (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing when supporting roof and ceiling only (inches)	Maximum spacing when supporting one floor, roof and ceiling (inches)	Maximum spacing when supporting two floors, roof and ceiling (inches)	Maximum spacing when supporting one floor only (inches)	Laterally unsupported stud height[a] (feet)	Maximum spacing (inches)
2 × 3[b]	—	—	—	—	—	10	16
2 × 4	10	24	16	—	24	14	24
3 × 4	10	24	24	16	24	14	24
2 × 5	10	24	24	—	24	16	24
2 × 6	10	24	24	16	24	20	24

For SI: 1 inch = 25.4 mm.

a. Listed heights are distances between points of lateral support placed perpendicular to the plane of the wall. Increases in unsupported height are permitted where justified by analysis.

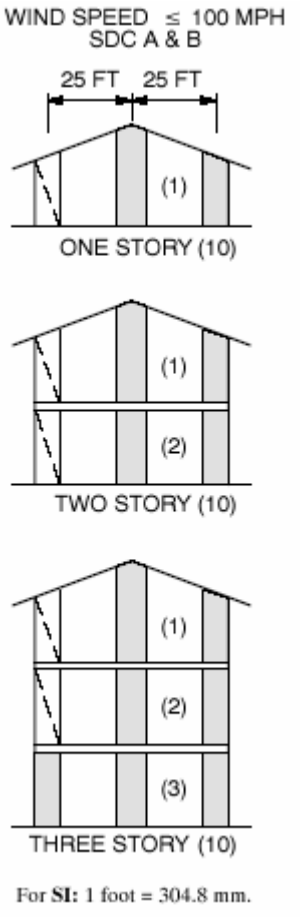
b. Shall not be used in exterior walls.

44. Section R602.6. Any stud in an exterior wall or bearing partition may be cut or notched to a depth not exceeding 25% of its width. Any stud may be drilled or bored, provided that the diameter of the hole is no greater than 40% of the stud width, the edge of the hole is no closer than ⅝ inch to the edge of the stud, and the hole is not located in the same as a cut or a notch.

45. Figure R602.6.1. When the top plate of any load-bearing wall is cut or notched more than 50% of its width, a galvanized metal tie shall 0.054 inch thick (16 gage) and 1.5 inches wide shall be fastened to each plate across and on each side of the opening with not less than six 16d nails.

46. Fireblocking shall comply with IRC Section R602.8.

47. Wall bracing shall comply with IRC Section R602.10.



LEGEND:

LET-IN BRACE – (METHOD 1, SECT. R602.10.3)

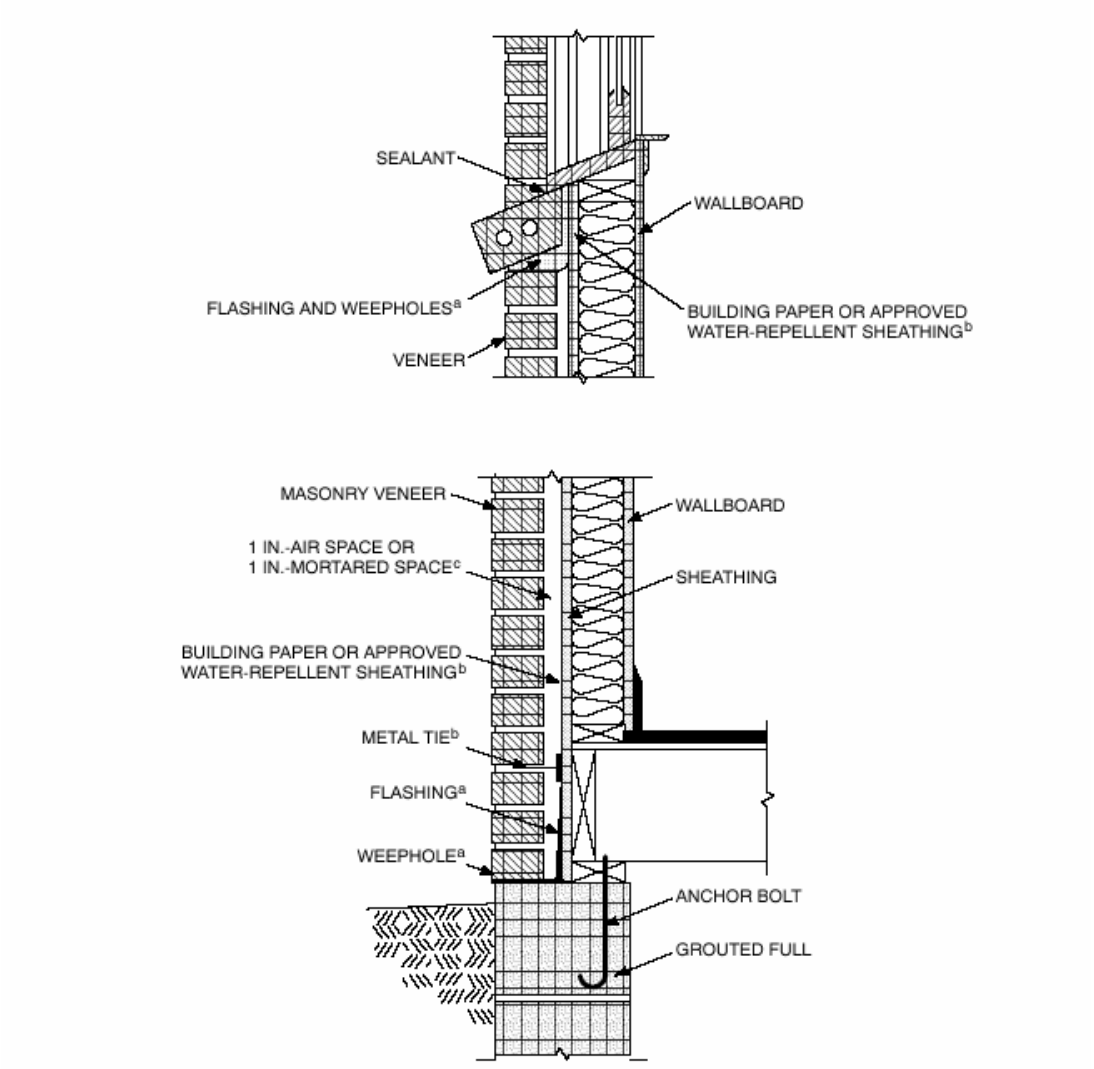
BRACED WALL PANEL CONSTRUCTION IN ACCORDANCE WITH SECTIONS R602.10.3 AND R602.10.4

	BRACED WALL PANELS PER SECT. R602.10.4		CONTINUOUS WOOD STRUCTURAL PANEL SHEATHING PER SECT. R602.10.5	
	BRACED WALL PANEL CONSTRCTION		MAXIMUM OPENING HEIGHT	
NOTES	METHODS 2, 4 - 8	METHOD 3	85% OF WALL HT.	67% OF WALL HT.
(1)	16%	16%	14%	13%
(2)	25%	16%	14%	13%
(3)	35%	25%	23%	20%
CRIPPLE WALLS				
(10)	PER SECT. R602.10.2			
(11)	NOT ALLOWED	75%		

Figure R602.10.1
REQUIRED WALL BRACING, PERCENT OF BRACED WALL LINE LENGTH

48. Section R703.1. Exterior walls shall provide the building with a weather-resistant exterior wall envelope.

49. Section R703.7 & R703.8. All stone and masonry veneer shall be installed in accordance with this chapter, Table R703.4 and Figure R703.7.



For SI: 1 inch = 25.4 mm.

FIGURE R703.7
MASONRY VENEER WALL DETAILS

50. Section R802. Wood roof framing shall comply with IRC. Ridge beam supports shall transmit loads to the foundation. Allowable spans for ceiling joists and rafters shall comply with Tables R802.4(1), R802.4(2), R802.5.1(3), R802.5.1(5) and R802.5.1(9).

51. Section 802.10. Wood roof trusses shall be designed in accordance with accepted engineering principles. The truss drawings shall be prepared by a registered design professional and shall include all required details. Wood roof trusses shall be braced in accordance with TPI/HIB.

52. Section R802.11. Roof assemblies which are subject to wind uplift pressures of 20 pounds per square foot or greater shall have roof rafters or trusses attached to their supporting wall assemblies by connections capable of providing the resistance required inTableR802.11. Wind uplift pressures shall be determined using an effective wind area of 100 square feet and Zone 1 in Table R301.2 (2), as adjusted for height and exposure per Table R301.2 (3). A continuous load path shall be provided to transmit the uplift forces from the rafter or truss ties to the foundation.

53. Section R806. Enclosed attics and enclosed rafter spaces formed where ceilings are applied directly to the underside of roof rafters shall have cross ventilation for each separate space by ventilating

openings protected against the entrance of rain or snow. Ventilating openings shall be provided with corrosion-resistant wire mesh, with 1/8 inch minimum to ¼ inch maximum openings.

54. Section R807. In buildings with combustible ceiling or roof construction, an attic access opening shall be provided to attic areas that exceed 30 square feet and have a vertical height of 30 inches or greater. The rough-framed opening shall not be less than 22 inches by 30 inches and shall be located in a hallway or other readily accessible location. A 30-inch minimum unobstructed headroom in the attic space shall be provided at some point above the access opening. See Section M1305.1.3 for access requirements where mechanical equipment is located in attics.

55. Sections R904 and R905. Roofs shall be covered with materials as set forth in these sections.

56. Section R1001.1. Masonry chimneys shall be constructed, anchored, supported and reinforced as required in this chapter and the applicable provisions of Chapters 3, 4 and 6. Flue size shall be determined in accordance with Figure R1001.12.2.

57. Section R1001.15. Any portion of a masonry chimney located in the interior of the building or within the exterior walls of the building shall have a minimum air space clearance to combustibles of 2 inches. Chimneys located entirely outside the exterior wall of the building, including chimneys that pass through the soffit or cornice, shall have a minimum air space clearance of 1 inch. The air space shall not be filled, except to provide fireblocking.

58. Section R1003.11. All wood beams, joists, studs and other combustible material shall have a clearance of not less than 2 inches from the front faces and sides of masonry fireplaces and not less than 4 inches from the back faces of masonry fireplaces. The air space shall not be filled, except to provide fire blocking in accordance with Section R1003.13.

59. Section R1005. Factory-built or masonry fireplaces shall be equipped with an exterior air supply to assure proper fuel combustion.

60. Section 1101.2. Residential One- and Two-Family Dwellings shall comply with IRC Chapter 11, Energy Efficiency, or International Energy Conservation Code (IECC), 2003 Edition. Compliance shall be demonstrated by meeting the requirements of the applicable sections and tables of this chapter. Where applicable, provisions are based on the climate zone where the building is located. The climate zone where the building is located shall be based on zone assignments inTableN1101.2 for the county and state in which the building is being constructed. Alternatively, the climate zone shall be permitted to be determined by the heating degree days assigned by the building official.

61. M1305.1.3 Appliances in attics. Attics containing appliances requiring access shall be provided with an opening and a clear and unobstructed passageway large enough to allow removal of the largest appliance, but not less than 30 inches high and 22 inches wide and not more than 20 feet in length when measured along the centerline of the passageway from the opening to the appliance. Access to the attic opening shall be provided by a permanent or pull-down stairway in all new construction. In existing installations, portable ladders shall be acceptable. The passageway shall have continuous solid flooring in accordance with Chapter 5 not less than 24 inches wide. A level service space at least 30 inches deep and 30 inches wide shall be present along all sides of the appliance where access is required. The clear access opening dimensions shall be a minimum of 20 inches by 30 inches, where such dimensions are large enough to allow removal of the largest appliance.

62. Section M1401.1. Heating and cooling equipment and appliances shall be installed in accordance with the manufacturer's installation instructions and the requirements of this code.

63. Section M1501.1. Dryer exhaust systems shall be independent of all other systems, shall convey the moisture to the outdoors and shall terminate on the outside of the building. Exhaust duct terminations shall be in accordance with the dryer manufacturer's installation instructions. Screens shall not be installed at the duct termination. Exhaust ducts shall not be connected with sheet-metal screws or

fastening means which extend into the duct. Exhaust ducts shall be equipped with a back-draft damper. Exhaust ducts shall be constructed of minimum 0.016-inch-thick rigid metal ducts, having smooth interior surfaces with joints running in the direction of air flow. Flexible transition ducts used to connect the dryer to the exhaust duct system shall be limited to single lengths, not to exceed 8 feet in length and shall be listed and labeled in accordance with UL 2158A. Transition ducts shall not be concealed within construction.

64. Section R1501.3. The maximum length of a clothes dryer exhaust duct shall not exceed 25 feet from the dryer location to the wall or roof termination. The maximum length of the duct shall be reduced 2.5 feet for each 45-degree bend and 5 feet for each 90-degree bend. The maximum length of the exhaust duct does not include the transition duct.

65. Appendix F. All new construction shall comply with the requirements of this appendix to resist radon entry and radon mitigation, if necessary.

66. Appendix G. All residential swimming pools, spas, and hot tubs shall comply with this appendix as amended and Article 680 of the National Electrical Code, 2002 Edition.